

Giancoli p169-170  
Q25-31 odd and even

$$\cancel{\text{kg}} \text{ m/s}^2$$

$$g = 9.8 \frac{\text{N}}{\cancel{\text{kg}}} = 9.8 \text{ m/s}^2$$

$$\boxed{\text{J}} = \text{Nm} = \text{kg} \frac{\text{m}^2}{\text{s}^2}$$

$$\frac{\text{gm}}{\text{s}} \rightarrow \frac{\text{kgm}}{\text{s}}$$

P169 Q25

Diagram showing a right triangle with sides  $8.6 \times 10^{-23}$  and  $6.2 \times 10^{-23}$ , and hypotenuse  $1.06 \times 10^{-22}$ . The angle is labeled  $54^\circ$ .

Angle  $6.2 \times 10^{-23}$

$8.6 \times 10^{-23}$

$1.06 \times 10^{-22}$

$6.2 \times 10^{-23}$

$c = \sqrt{\Delta^2 + O^2} = \sqrt{(8.6 \times 10^{-23})^2 + (6.2)^2}$

$= 1.06 \times 10^{-22} \text{ kgm/s}$

$\frac{\sin 90}{1.06 \times 10^{-22}} = \frac{\sin x}{8.6 \times 10^{-23}}$

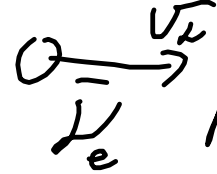
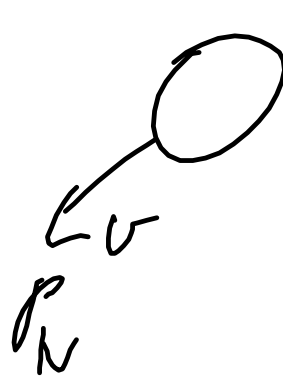
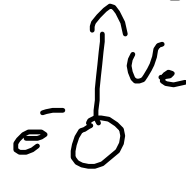
$\tan^{-1} \left( \frac{8.6}{6.2} \right) = 54^\circ$



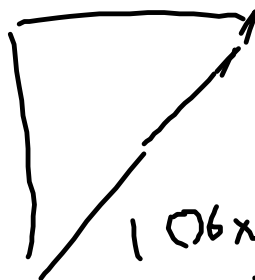
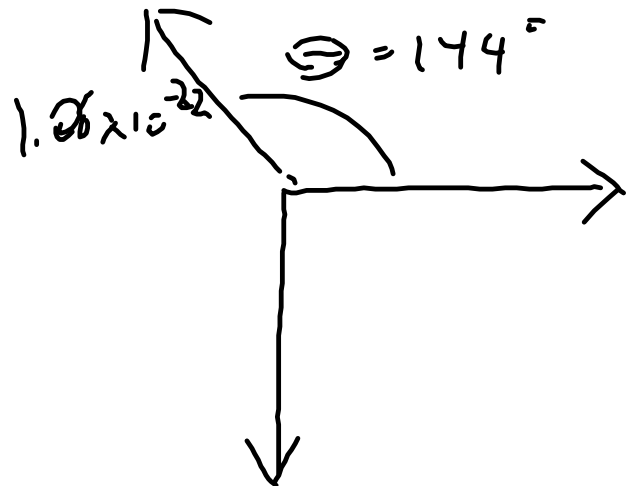
$$V=0$$

$$(62) \sim 4$$

$$P_e = 8.60 \times 10^{-23} \text{ kg m/s}$$



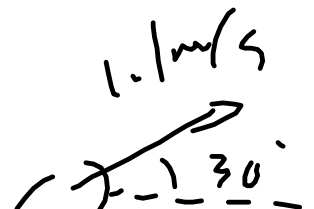
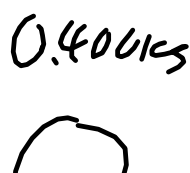
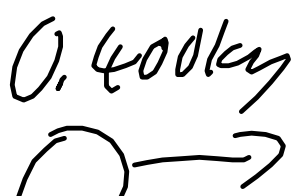
$$P_U = 6.20 \times 10^{-23} \text{ kg m/s}$$

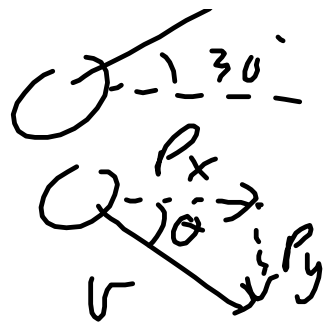
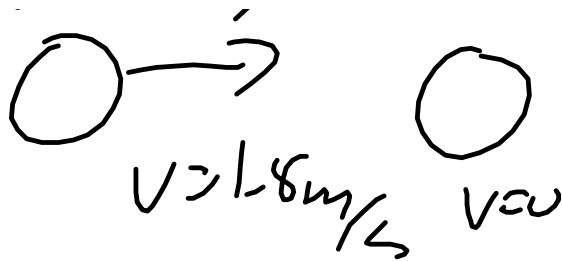


$$\tan^{-1} \left( \frac{6.2 \times 10^{-23}}{1.06 \times 10^{-22}} \right) = 36^\circ$$

$$90 - 36 = 54^\circ$$

$$54 + 90 = 144^\circ$$





$$\sum P_{xi} = \sum P_{xf}$$

$$(0.40 \text{ kg} \times 1.8 \text{ m/s}) = 0.4 \text{ kg} \times 1.1 \text{ m/s} (\cos 30^\circ) + P_x$$

$$P_x = \cancel{1.4895 \text{ kg m/s}} \quad 0.3389 \text{ kg m/s}$$

$$\sum P_y = 0 = 0.4 \text{ kg} \times 1.1 \text{ m/s} (\sin 30^\circ) + P_y$$

$$P_y = -0.22 \text{ kg m/s}$$

$$b) P = \sqrt{P_x^2 + P_y^2} = \cancel{1.90226 \text{ kg m/s}} \quad 0.404 \text{ kg m/s}$$

$$v = \frac{P}{m} = \cancel{4.7556 \text{ m/s}} \quad 1.01 \text{ m/s}$$

$$\tan \theta = \frac{P_y}{P_x} = \frac{0.22}{\cancel{0.3389}} \quad \theta = \cancel{6.6^\circ} \quad 33^\circ$$

$v = \cancel{4.76 \text{ m/s}} \quad 1.01$   
to original motion  $33^\circ$